to claim 4.

The Office objections (h) on page 6 "with or without" and "a major or minor amounts" should be withdrawn because the language "with or without" and "a major or minor amounts" are terms used in the claims which are not contrary to accepted meanings in the chemical polymer gel art. These words provide clarity and precision not inconsistent with the teachings of the polymer gel arts. The meaning of each word "with", "or", "without", "a major", "or" "a minor", "amounts" are apparent from the polymer gel art. The words and terms "with or without" and "a major or a minor amounts" are not relative terminology and not of degree and not a variable, but precise words and terms.

For example, a first grade story book lesson of parent and child, "with" precisely denoted the fact that parent A is walking to the store to buy a toy "with" child B. Likewise, parent A is walking to the store to buy a toy "without" child B. "With or Without" is used in the claims to denote an admixture of polymer A "with" polymer B or an admixture of polymer A "without" polymer B. "With or without" is use in the claims to simplify the statement: (1) polymer A forms a composition comprising polymer A "with" polymer B or (2) polymer A forms a composition comprising polymer A "without" polymer B.

Likewise, "a major or minor amounts" is not a relative terminology, not a term of degree, and not a variable term, but a precise term. The word "major amount" is a conventional term which means about 51 weight percent and higher (e.g. 55%, 60%, 65%, 70%, 75%, 80%, and the like) and the term "minor amount" is a conventional term which means 49 weight percent and lower (e.g. 2%, 5%, 10%, 15%, 20%, 25% and the like) which is found in US patent #6117176 col. 12, lines 27-30, US patent #6148830 col. 9, lines 41-43, and US patent #6161555 col. 12, lines 60-63. The present patent application is devolved from and a c-i-p of the foregoing mentioned US patents. The work "amounts" has its normal conventional meaning being plural form of the word "amount". The word amounts is use in this case to refer to "a major amount" or "a minor amount" written more simply as "a major or minor amounts" which does not deviate from the normal conventional use of the word. Furthermore, the terms "major amount" and "minor amount" have been held acceptable (see Ex parte Pritchard et al., 103 USPQ 160 and Ex parte Freeman, 100 USPQ 315 respectively).

The language "with or without a major or minor amounts" is used in the specification and claims which must be read in context of the complete phase which involves a mixture of "a gel being formed with or without a major or minor amounts of (III) one or more selected copolymers or polymers" which is logical way to simplify the two alternative statements: "a gel formed with a major amount of (III) one or more selected copolymer or polymers", or "a gel formed with a minor amount of (III) one or more selected copolymer or polymers". The use of the words in its proper contexts is the best and simplest attempt to state a polymer gel composition comprising a mixture of polymers having a major or minor amounts of other polymers:

(1) polymer A + minor amount of polymer B, or
(2) polymer A + major amount of polymer B, or
(3) polymer A + minor amount of polymer B + a minor amount of polymer C, or
(4) polymer A + major amount of polymer B + a minor amount of polymer C

As you can see, in the case of a mixture of polymers A, B, C, D, E.... G etc., there are a large number of permutations of different polymers indicating which one being in major or minor amounts.

It is possible to continue with the addition of the mixture to list each polymer cited in the claims, but for simplicity, it more than adequate to state "with or without a major or minor amount" instead.

In view of the above, the terms "with or without a major or minor amount" as used in the claims makes the metes and bounds of the claimed invention much more clearer than otherwise possible because of the limitations of the English language or any other language.

The rejection under 35 USC §112 second paragraph should be withdrawn in view of the amendments not made for reason of any prior art.

**Rejection of Claims 1-9 under 35 USC 102(b) and 103(a) over Makowski**

Claims 1-9 and new claims are directed to an invention which is novel (not described in a printed publication or in public use or on sales more than one year

prior to the date of application for patent) and not obvious to a person having ordinary skill in the art. The rejection should be withdrawn.

The instant claims 1-9 of the invention are not anticipated, not inherent, not the same, and not obvious in view of Makowski et al., patent #3821149 and the rejections under 35 USC §102(b) as anticipated by or, in the alternative, under 35 USC 103(a) should be withdrawn.

Applicant's claimed gel invention is not anticipated by Makowski because:

(1) Makowski is for a **different** invention.

(2) Makowski describes **different** copolymers;

(3) Makowski utilizes **different** plasticizers for different purposes; and

(4) Makowski's compositions are different than Applicant's claimed gel compositions which gel compositions are not describe, not suggested, not explicitly, not implicitly, and not inherently taught by Makowski. Thus, because the copolymers are **not the same**, because the plasticizers are **not the same**, because the compositions are **not the same**, and because the patented invention is **not the same** Applicant's **claimed gel compositions would not be obvious** to one of ordinary skill in the art.

Clearly, the present claimed gel invention is not obvious in view of Makowski because: Makowski specifically (5) **excludes** the block copolymers of Applicant's claimed compositions; specifically (6) **excludes** the combinations of block copolymer and random copolymer of Applicant's claimed gel compositions; specifically (7) **excludes** the combinations of plasticizers, block copolymers, and random copolymers of Applicant's claimed gel compositions, specifically (8) **excludes** the plasticizers of Applicant's claimed gel compositions, and specifically (9) **excludes** the plasticizers of Applicant's claimed gel compositions from his patented invention.

Therefore, Applicant's gel compositions are not anticipated under §102(b) for reasons (1) thru (4) and not obvious under §103(a) for reasons that (5) thru (9).

Applicant offers reasons, arguments, evidence, and proofs to rebut the §102(b) anticipation and direct the Office to teachings found in Makowski to rebut the §103(a) obviousness rejections commensurate with each and every one of the points (1) thru (9) raised above which corresponds to those items cited by the Office which are identified by column and line numbers.

Makowski disclosure as a whole lacks §102 anticipation of Applicant claimed gel compositions. A person having ordinary skill in the art would find the differences between Applicant's gel compositions and Makowski's disclosure as a whole not obvious under §103(a) for all the reasons and facts set forth below.

Starting with Makowski's Abstract, the Office Action cites Makowski's disclosure of plasticized (10) "thermoplastic semicrystalline block copolymers" found in the Abstract at col. 2, lines 3-32 and (11) A-B-A "polyethylene-polystyrene-polyethylene block copolymer including an assortment of plasticizers" at col. 6, line 28 col. 8, line 33.

Although Makowski's patent was filed in 1973, it is well know by those of ordinary skilled in the copolymer art that up to 1994 useful copolymers of polyethylene-polystyrene-polyethylene were not available and that attempts to copolymerize ethylene and styrene monomers by free radical methods or conventional Ziegler-Natta catalysts have bee generally unsuccessful, typically yielding mixtures of homopolymers (K. Soga, et al., Polym. Bull., 20, 237 (1988), P. Aaltonen et. al., Eur. Polym, J., 30, 683 (1994), and P. Aaltonen, et. al., Macromolecules, 27, 3136 (1994)).

The Office has mistakenly identified Makowski's plasticized thermoplastic semicrystalline A-B-A block copolymers with Applicant's (12) $(Y\text{-}AY)_n$ random interpolymers or substantially random copolymers which were only recently discovered (see page 4, lines 24-31 Dow Chemical Company publications cited in the Specification, newly cited attached IDS US Patent #5739200, and see "Classification of Ethylene-Styrene Interpolymers based on Comonomer Content" copies attached).

**THE COPOLYMERS ARE NOT THE SAME**

The Office has also mistakenly identified Makowski's plasticized thermoplastic semicrystalline A-B-A block copolymers with Applicant's (13) (A-Z-A) block copolymers. The identification of the copolymers (10, 11, 12, and 13) being the same block copolymers is clearly incorrect. Applicant's copolymers are not the same copolymers as described in Makowski. The A block of Makowski is not the same A block of Applicant's block copolymers. The B block of Makowski is not the same Z block of Applicant's block copolymers. The A-B-A block copolymer of Makowski

is not the same as the $(Y\text{-}AY)_n$ random interpolymers of Applicant's claimed invention.

First of all, Makowski copolymers are not the claimed copolymers of Applicant's gel compositions. The copolymer blocks A-B-A disclosed in Makowski denotes for example

A = polyethylene and

B = polystyrene, (see col. 1, line 36; col. 10, line 52; col. 11, lines 25-26) whereas, to the contrary and oppositely, Applicant's A-Z-A block copolymers denotes for example (Applicant's multi block copolymer polystyrene-polyethylene-polyethylene-polypropylene-polystyrene)

A = polystyrene and

Z = polyethylene-polyethylene-propylene and the like.

Makowski's A-B-A end block-A can not be polystyrene. Makowski's A-B-A block copolymers are devoid of any end B-blocks of polystyrene (col. 2, line 31-32). Makowski specifically excludes Applicant's claimed A-Z-A type block copolymers (see col. 9, lines 28-30 "Also excluded are 3 block copolymers of the B-A-B type which have undesirable features for the purpose of this invention."). The specific exclusion of type B-A-B block copolymers taken as a whole with the other aspects of Makowski's disclosures would lead one of ordinary skilled in the block copolymer art to view Applicant's claimed A-Z-A type block copolymer gel compositions unobvious under §103(a).

**THE CRYSTALLINITY BLOCKS ARE DIFFERENT**

Secondly, the semicrystallinity or crystallinity of Makowski's (11) A-B-A block copolymers, resides in his end A-blocks while crystallinity in Applicant's disclosed (13) A-Z-A block copolymers is associated only in the mid Z-blocks and not the end A-blocks of Makowski. The specific exclusion of crystallinity from the middle B-blocks of Makowski's A-B-A block copolymers taken as a whole with the other aspects of Makowski's disclosures would lead one of ordinary skilled in the block copolymer art to view Applicant's claimed A-Z-A type block copolymer gel compositions(having crystallinity in the mid Z-blocks) unobvious under §103(a).

**MAKOWSKI'S COPOLYMERS ARE NOT RANDOM**

Additionally, Applicant's (12) $(Y\text{-}AY)_n$ random interpolymers or substantially random copolymers being random copolymers they are specifically excluded by Makowski (see col. 9, lines 25-30 "Random and statistical copolymers are specifically excluded from this invention because they do not provide the phase separated products which we require." and at col. 5, lines 35-40 " In marked contrast a random copolymer of ethylene and t-butyl styrene is non-crystalline and when plasticized with 50 to 100 parts of dibutyl phthalate provides a product of little desirable physical properties."). Therefore, the specific exclusion of random copolymers by Makowski taken as a whole with the other aspects of Makowski's disclosures would lead one of ordinary skilled in the block copolymer art to view Applicant's claimed random (interpolymer) copolymer or in combination with Applicant's A-Z-A block copolymer gel compositions unobvious under §103(a).

**THE PLASTICIZERS ARE DIFFERENT AND FOR A DIFFERENT USE**

The Office has also mistakenly identified Makowski's "assortment of plasticizers" as they are combined with Makowski's A-B-A block copolymers. The mistake is the failure to appreciate the purpose and use of Makowski's plasticizers. Makowski's plasticizers are to plasticize the middle B-blocks of his block copolymers. In the case of polyethylene-polystyrene-polyethylene, and because of Makowski's solubility parameter conditions, his plasticizer for his PE-S-PE block copolymer must be a phthalate ester, not an oil (see col. 1, lines 35-38 and Example 1, col. 11. lines 1-5). Makowski teaches oil plasticizers are not good plasticizers for the middle B-blocks, the oil plasticizers can not plasticize polystyrene. He teaches low molecular weight polymeric oils can be used with poly-t-butyl styrene copolymers not polystyrene. The oil plasticizer can only be use to dissolve the middle B-block when it is poly-t-butyle-styrene not polystyrene (see col. 1, lines 35-42 and col. 7, lines 1-13). The requirement that useful plasticizers have a solubility parameter within 1.2 of middle B-blocks (see col. 1, line 24-27) excludes the use of paraffinic and naphthenic oils because their solubility parameter on the average is greater than 1.2. Moreover, at col. 4, lines 68 thru col. 5, lines 3 Makowski teaches "those plasticizers which are outside the above constraint will usually bleed or excude from the copolymers and adversely affect the physical properties of said

systems" (also see col. 5, lines 18-21). The only suitable plasticizers for polystyrene are phthalate and phosphate, etc. (see col. 7, lines 44-46).

Hence, Makowski's specific exclusion of plasticizer solubility parameter greater than 1.2 by Makowski (thereby excluding oils because such oils will not, to any useful degree, plasticize Makowski's middle styrene B-blocks therefore not acceptable under Makowski's criteria at col. 7, lines 21-25 and lines 34-37 of plasticizer compatibilities and acceptable would lead one of ordinary skilled in the art to view Applicant's gel compositions unobvious under §103(a).

**THE Mw ARE DIFFERENT**

The Office is mistakenly with associating Makowski disclosed polyethylene end A-block molecular weights from 10,000 to 250,000 whereas the interpolymers **produced by metallocene catalysts, using single site, constrained geometry addition polymerization catalysts results in poly(ethylene-styrene) random copolymers with weight average molecular weight (Mw) typically in the range of 1 x 105 to 4 x 105, and molecular weight distributions (Mw/Mn) in the range of 2 to 3.** The weight average molecular weight for various type interpolymers are: S Series is from 150,000 to 350,000; type M series is from 200,000 to 300,000 and type E series is from 250,000 to 350,000. The block copolymers A-Z-A of Applicant exhibits for example: low A (polystyrene) molecular weights, but high Z (ethylene-ethylene-propylene) molecular weights. This is because the thermoplastic component A needs to melt under heat while the component Z is plasticized. Likewise, in the case of ethylene-styrene interpolymers, styrene melts under heat while ethylene is plasticized and not the opposite as taught by Makowski which would be unobvious to one of ordinary skilled in the art with respect to §103(a).

**THE PLASTICIZED PHASES ARE DIFFERENT**

As taught in Makowski Example I and 2, his PE-polystyrene-PE block copolymer must be plasticized with a diethyl phthalate to form a continuous styrene-ester phase. A oil plasticizer can not, to any useful degree, plasticize polystyrene.

In summary, the Office statements have been cited in isolation without due consideration of what Makowski discloses as a whole, without regard to the

specificity as to what Makowski discloses, without regards as to Makowski's disclosure of styrene copolymers "devoid of any end B-blocks" a condition not inherent in the Applicant's claimed invention, without regards to Makowski's requirement that "....the B block.... compatibility with plasticizer be maintained...." a condition not inherent in the Applicant's claimed invention, without regards that Makowski's examples of suitable plasticizers for polystyrene block are all phthalates and that paraffinic based oils are not suitable for use with polystyrenes, a condition not inherent in the Applicant's claimed invention, without regards that Makowski discloses "....random and statistical copolymers are specifically excluded from his invention because they do not provide the phase separated products which we require" a condition not inherent in the Applicant's claimed invention, without regards that Makowski requires the "....B block...." be "....plasticized forming a continuous phase, a condition not inherent in the Applicant's claimed invention.

Hence, the Office is mistaken, as pointed out in Makowski's own disclosure (based on the type of block copolymers, plasticizers, compositions, conditions, requirements, and products pointed out above). Applicant gel compositions are not inherent and does not have the same properties of Makowski's compositions which is "similar to leather". Tough leather films, tough leather hoses, tough leather tubing of Makowski are far from the soft gels of Applicant's claimed invention. Clearly, Makowski does not disclose the properties of Applicant's claims is because the properties of Applicant's gel compositions are not inherent in Makowski's tough flexible leather composition. No where does Makowski discloses a gel; no where does Makowski discloses any of the recited claimed gel properties of Applicant's invention; no where does Makowski discloses the rigidities of Applicant's invention; and no where does Makowski discloses the interpolymers, block copolymers or polymer gel compositions of Applicant's claims. the rigidity of tough leather would be extremely difficult to try to measure, if not impossible to measure using the Gram Bloom rigidity method first used by Applicant to measure soft gel compositions. The rigidity or hardness properties of Makowski tough leather may have measured ranges from less than A50 or C73 to D55 and higher; whereas it would be difficult to measure rigidity of Applicant's gel compositions which have the consistency of Jell-O, silicone implant gel, whale blubber, over cooked sea cucumbers, or material softer than the vitreous humor of the eye using the same

hardness method for leather. None of Applicant's gel compositions (with gel rigidity of from less than about 2 gram Bloom to about 1,800 gram Bloom) for example having the consistency of Jell-O, silicone implant gel, whale blubber, cooked sea cucumbers, and the eye's vitreous humor and still have useful strength are not inherent in Makowski's composition. The claimed gel compositions are not within the generic disclosure of Makowski and one or ordinary skill in the art would not know, how to obtain the properties of Applicant's gel compositions with the disclosure of Makowski before him.

Based on the type of block copolymer and plasticizers disclosed in Makowski, the Office failed to appreciate that Makowski's block copolymer and plasticizers are different and not the same in the gel compositions claimed by Applicant.

Moreover, the interpolymers of etylene-styrene copolymers of the gel compositions of Applicant's claims did not exist at the time of Makowski's filling date and Applicant's claimed gel invention would not have been obvious to one skilled in the art. Therefore, Applicant's claimed gel compositions are not anticipated, not inherent, and not obvious in view of Makowski for all the cited reasons above.

The ethylene/styrene (ES) interpolymers are new, with novel properties, not perviously known. They are substantially random, more specifically preudo-random interpolymers or simply interpolymers made by metallocene catalysts and single site, constrained geometry, addition polymerization. As described, low amounts of vinyl modifying plasticizers and low amounts of naphthenic and paraffinic oils are use with substantially random interpolymers of ethylene/styrene (ES) copolymers as described in Cheung, et. al., US patent #5739200 ('200) (see attached). The low amount of plasticizer utilized in the interpolymer compositions of the Cheung patent '200 do not anticipate Applicant's claimed invention which is not obvious in view of Cheung's because Applicant's mineral oil plasticizers are specific and not for plasticizing the styrene component of the random interpolymers. The type of plasticizers are esters and oils (naphthenic and paraffinic). The amount of plasticizer taught in Cheung is "not greater than about 50% and preferably not greater than about 45% weight based on the combined weight of A (being ethylene) and B (being styrene) of plasticizer as component B" which is far below Applicant's substantially greater plasticizer amount of about 250 to about 1,600 parts of a plasticizer

sufficient to achieve a gel rigidity of from less than about 2 gram Bloom to about 1,800 gram Bloom made from the ethylene-styrene interpolymers in combination with multi-block copolymers forming Applicant's claimed invention.

The Office's attention is directed to the line of continuation-in-part "crystal gel" patents which the present application devolved from. These include 611176, 6148830, and 6161555 all directed to claims reciting crystal gel compositions, all having Makowski cited as reference.

In view of Applicant's amendments, the rejection of claims 1-9 under §112 should be withdrawn. For all the reasons why Makowski is not the same but a different invention, the rejections under §102(b) and §103(a) should be withdrawn. In view of Applicant's substantially greater amount of plasticizer, Applicant's gel compositions are not inherent in Cheung.

Total independent claims including new claims is 6 less three equals 3 X $80.00 = $240.00 fee which is enclosed.

A new IDS is being sent under separate cover with corrections to the specification, and drawings as indicated above.

Should Examiner have any questions regarding this response, Applicant can be reached at (650)
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Respectfully submitted,

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